

PSÖDOİNTRADURAL/İNTRARADİKÜLER DİSK HERNİASYONU: BİR VAKA SUNUMU VE LİTERATÜRÜN GÖZDEN GEÇİRİLMESİ

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ÖZET

İntradiküler disk herniasyonu, intradural disk herniasyonunun özel bir alt tipidir. İntradural disklerin oluşum etyolojisine yönelik birçok teori öne sürülse de bu patolojik durumun oluşum patofizyolojisi tam olarak açıklanamamıştır. Bu patolojik durum dural anatomi temelinde sınıflandırılarak tip A ve tip B olmak üzere 2 alt gruba ayrılmıştır. İntradural intradiküler disklerin tanımlanmasında preoperatif dönemde bir spesifik yöntem veya görüntüleme bulgusu yoktur. Bu nedenle bu hastaların çoğuna intraoperatif olarak tanı konulmaktadır ve hatta başarısız bel cerrahi sonrası ikinci operasyonda tanı almaktadır. Bu vaka sunumunda 54 yaşında, sol siyatalji kliniğiyle başvuran ve yapılan preoperatif görüntüleme tetkiklerinde spesifik bir bulgu saptanmayan bir bayan hastanın klinik ve radyolojisi sunularak literatür tekrar gözden geçirildi.

Anahtar sözcükler: İntradural disk herniasyonu, intradiküler disk herniasyonu, lomber disk hernisi.

Pseudointradural/Intradicular Disc Herniation: A Case Report and Review of the Literature.

SUMMARY

Intradicular disc herniation is a special subtype of intradural disc herniation. Although many theories has been suggested about the formation of intradural discs, the pathophysiology of this pathological state hasn't been explained exactly yet. This state has been classified on the basis of dural anatomy and separated into two subgroups as type A and B. There is no spesific technique or neuroradiological picture of diagnosing intradural intradicular disc herniation in the preoperative process. Because of this, the patients are mostly diagnosed intraoperatively and they are even diagnosed in next operations after failed back surgery. In this case report we presented the clinical and radiologic features of a 54 year old female patient with the applying symptom of left sciatalgia and with no spesific findings in her preoperative imaging studies and the literature has been reviewed.

Key words: Intradural disc herniation, intradicular disc herniation, lumbar disc herniation.

Many etiological factors have been suggested for the formation of intradicular disc herniation. Despite these etiological factors, the formation mechanism of intradicular disc herniation hasn't been exactly understood yet¹. Intradicular disc herniation has been firstly described by Barbera et al in 1984^{1,2}. Twenty three intradicular disc herniation cases have been reported until 2009¹⁻¹⁷. In this paper, the twenty fourth patient with pseudointradural/intradicular disc herniation will be reported and the literature will be reviewed.

CASE REPORT

A fiftyfour year-old female patient applied to University Neurosurgery Clinic with the complaints of pain in left leg extending from hip to heel and numbness extending from calf to plantar surface of left foot. It was learned from her history that her back pain complaint had begun two months ago. Her back pain had decreased gradually and left leg pain and numbness had begun two weeks ago. The patient had applied to a health center and medical treatment. But her complaints had persisted despite medical treatment then, she had applied to our clinic. Physical examination revealed Lasegue's sign positive at 30 degrees on left leg, hypoesthesia in left S1 dermatome and decreased of left Achilles tendon reflex. The

patient was interned and we performed functional lumbar X-RAY, 3D lumbar CT and lumbar MRI. MR imaging of the lumbar spine showed (Figure 1,2) narrowing of L45 disc level, increased in signal density secondary to L4-L5 end plate degeneration (Modic type1 degeneration), sequestered fragment at the left S1 root configuration seen on T2-weighted axial image (Figure 3). Epidural fat tissue was observed between the corpus dorsal surface and ventral surface of S1 nerve root. After complete the necessary examinations, the patient underwent surgery. We performed left L5 hemilaminectomy and left S1 foraminotomy with a surgical microscope. Left S1 nerve root had a different colour, hard and immobile in the entrance of left S1 nerve root canal. Dura was ecarted medially and when we controlled the epidural space, although we didn't see adhesion. We observed a dural defect on ventrolateral of left S1 nerve root's axilla. When dura was incised by a nerve hook we saw intradicular soft disc. The sequestered intradicular disc was removed totally and then the mobility of left S1 nerve root increased. Dura was ecarted medially and we looked up L5-S1 disc level. There was only bulging in this level. There was no cerebrospinal fluid outflow from dura defect during valsalva maneuver. The incision was closed in anatomic plan. Her pain completely disappeared after surgery. She was taken into physiotherapy

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Figure 1 ve 2. Increase in signal density secondary to L4-L5 end plate degeneration (Modic type I degeneration) and narrow of L4-5 disc level.

programme. She was discharged on the postoperative fifth day.

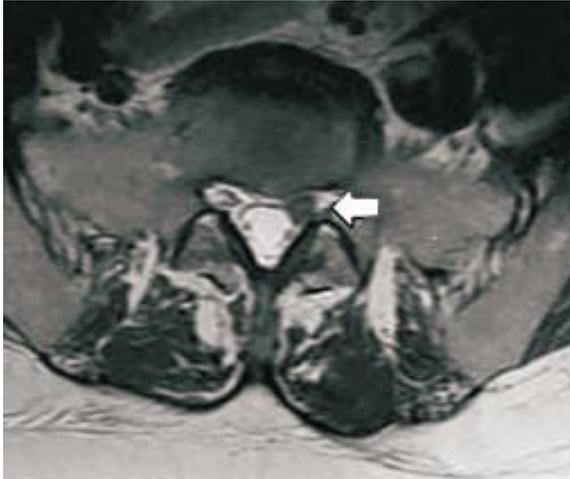


Figure 3. Sequestered fragment at the left S1 nerve root configuration seen on T2-weighted axial image.

DISCUSSION

Intradural disc herniation is a rare pathological entity that may have catastrophic results like conus medullaris syndrome. In 1942, Dandy first reported an intradural disc herniation among 300 patients who under went surgery for lumbar disc herniation¹⁸. Intradural disc herniation is seen in cervical spine in the ratio of %3, in thoracic spine %5 and in lomber spine, especially at the L45 levels, %92^{3-5,17,19-21,23}. Its incidence alters between %0,3-1,5⁵. Mut et al.³ classified intradural discs on the basis of spinal dural

anatomy in 2001. Type-A herniated disc is in dural sac and type-B the herniated disc is located in preganglionic region of nerve root in dural sheet^{3,6,19,23}.

Intraradicular disc herniation is a special and rare form of intradural disc herniation^{5,6,17,20,22}. It was first described by Barbera et al in 1984². In 2004, Özdemir et al.⁴ found a total 16 cases intradural lumbar disc herniation in the literature and added two new cases. Then, two cases intradural lumbar disc herniation were described by Karabekir et al.¹². Then, further a new case with intradural intradural lumbar disc herniation was diagnosed intraoperatively by Özer et al.⁶. In 2008, Turgut et al.⁵ found a total twenty one cases intradural lumbar disc herniation in the literature and added one new cases. We found only 23 cases of intradural intradural lumbar disc herniation in the literature and the last case has been reported by Akhaddar et al.¹⁻¹⁷ Five of the cases had been operated because of failed back surgery and it had been understood peroperatively that they had intradural disc herniation^{5-7,15}. Only myelography was performed for five cases^{2,9,14,16,17}. CT-myelography was performed for one case¹⁵. Myelography and discography was performed for one case⁷. Karabekir et al.¹² reported the first L3 intradural disc herniation in the literature. There was only one case with L3 nerve root and only two cases with L5 nerve root involvement and the others involvement was S1 nerve root¹⁻¹⁷. Özer et al.⁶ suggested the term of 'pseudo intradural/intraradicular disc herniation' in 2007. They reported in this description that only outer sheet of dura is torn and after removing the sequestered disc fragment no cerebrospinal fluid outflow occur.

A lot of theories had been suggested about the etiology of intradural/intraradicular disc herniation.

Barbera et al.² had pointed that adhesions and congenital weakness in dura might cause the formation of intradiscal disc herniation. Dandy¹⁸ had proposed that acutely herniated disc might erode the dura after penetrating to the anterior wall of the duramater. In 1969, Blikra made an anatomical investigation on 40 cadavers²⁴. This anatomical investigation revealed dense non-saparable adhesion of the ventral dura to the posterior longitudinal ligament at the L45 level in eight of 40 cadavers. It was suggested that adhesions formed congenital or caused by trauma, surgery, inflammation osteophytes or disc protrusion fixed dural sac. In those cases, extruded fragment tore the ventral surface of the dura. This theory only explains the intradural disc herniations at the L45 level³. For partial intradural disc penetration, Klopfenstein suggested that the disc fragment partial migrated through the dura without sufficient force to penetrate the inner dural layer²⁵. But this theory fails to explain how a large disc penetrates through the narrow dural nerve root. In basis of this theory, Akhadar et al.²⁶ Suggested that osteophyte formation may play an important role in this process. Despite these theories the formation mechanism of intradural/intradiscal disc herniation are still unclear¹.

Except a few established cases reported in the literature^{21,27}, there aren't any specific neuroradiological technique or neuroradiological picture to identify the intradiscal disc herniation⁵. Because of this all the cases are diagnosed intraoperatively. We also used three dimension CT and 1,5 tesla MRI for diagnosis but diagnosed intraoperatively.

REFERENCES

- Süzer T, Tahta K, Coşkun E. Intradiscal lumbar disc herniation: case report and review of the literature. *Neurosurgery* 1997;41(4):956-58.
- Barbera J, Gonzales-Darder J, Garcia-Vazquez F: Intradiscal herniated lumbar disc: Case report. *J Neurosurg* 1984;60:858-60.
- Mut M, Berker M, Palaoğlu S. Intradiscal disc herniations in the lumbar spine and a new classification of intradural disc herniations. *Spinal Cord* 2001;39(10):545-8.
- Ozdemir N, Yilmaz HS, Acar UD, Tektas S. Intradiscal lumbar disc herniation: report two cases and review of the literature. *Br J Neurosurg* 2004;18(6):637-43.
- Turgut M, Tekin C, Unsal A. Intradiscal extruded disc herniation as a rare cause of failed back surgery- case a report and review the literature. *Neurol Neurochir Pol* 2008;42(3):251-4.
- Ozer E, Yurtsever C, Yücesoy K, Güner M. Lumbar intradiscal disc herniation: report of a rare and preoperatively unpredictable case and review of the literature. *Spine J* 2007;7(1):106-10.
- Tsuji H, Maruta K, Maeda A. Postoperative intradiscal intervertebral disc herniation. *Spine* 1991;16:998-1000.
- Akhaddar A, Boulahroud O, Elasar A, Elmostarchid B, Boucetta M. Radicular intradural lumbar disc herniation. *Eur Spine J* 2010;19 Suppl 2:S149-52.
- Nazzal MM, Croissant PD, Ali MA, et al. Intradiscal lumbar disc herniation: a case report and review of the literature. *J Spinal Disord* 1995;8:86-8.
- Schisano G, Franco A, Nina P. Intradiscal and intradural lumbar disc herniation: experiences with nine cases. *Surg Neurol* 1995;44:536-43.
- Schisano G, Nina P. Intradiscal lumbar disc herniation: a case report and review of the literature. *Neurosurgery* 1998;43:400.
- Karabekir HS, Karagöz Güney F, Kagnici Atar E, et al. Intradiscal lumbar disc herniation: report of two cases. *Spinal Cord* 2005;44:318-21.
- Finkel HZ. Intradiscal, intervertebral disc herniation. A case report. *Spine* 1997;22:1028-9.
- Ergüngör MF, Kars HZ. Intradiscal herniation of a lumbar disc: a case report. *Neurosurgery* 1987;21:909-11.
- Akdemir H, Oktem IS, Koç RK, et al. Postoperative intradiscal lumbar disc herniation: a case report. *Neurosurg Rew* 1997;20:71-4.
- Açıköz B, Özcan OE, Iplikcioğlu C, et al. Intradiscal disc herniation. *Neurosurgery* 1986;19:673-4.
- Lesoin F, Duquennoy B, Rousseaux M, Servato R, Jormin M. Intradural rupture of lumbar intervertebral disc: report of three cases with review of the literature. *Neurosurgery* 1984;14(6):728-31.
- Sakai T, Tsuji T, Asazuma T, Yato Y, Matsubara O, Nemoto K. Spontaneous resorption in recurrent intradural lumbar disc herniation: A case report. *J Neurosurg Spine* 2007;6(6):574-8.
- Lee JS, Suh KT. Intradural disc herniation at L5-S1 mimicking an intradural extramedullary spinal tumor: a case report. *J Korean Med Sci* 2006;21(4):778-80.
- Borata L, Jonasson P, Agolli A. Spontaneous resorption of intradural lumbar disc fragments. *Spine J* 2008;8(2):397-403.
- Choi JY, Lee WS, Sung KH. Intradural lumbar disc herniation-is it predictable preoperatively? A report of two cases. *Spine J* 2007;7(1):111-7.
- Chaudhary KS, Bapat MR. Conus medullaris syndrome due to an intradural disc herniation: A case report. *Indian J Orthop* 2008;42(1):94-6.
- Oztürk A, Avci E, Yazgan P, Torun F, Yücesoy S, Karabag H. Intradural herniation of intervertebral disc at the level of Lumbar 1-Lumbar 2. *Turk Neurosurg* 2007;17(2):134-7.
- Koç RK, Akdemir H, Oktem IS, Menkü A: Intradural lumbar disc herniation. report of two cases. *Neurosurg Rev* 2001;24(1):44-7.
- Klopfenstein J, Han PP, Kim L, Spetzler RF. Herniated lumbar disc sequestered between the internal and external dural sleeves: case report. *Barrow Quarterly* 2003;19:25-7.
- Han IH, Kim KS, Jin BH. Intradural lumbar disc herniations associated with epidural adhesion: report two cases. *J Korean Neurosurg Soc* 2009;46:168-71.
- Hida K, Iwasaki Y, Abe H, Shimazaki M, Matsuzaki T. Magnetic resonance imaging of intradural lumbar disc herniation. *J Clin Neurosci* 1999;6(4):345-7.

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Geliş Tarihi : *11.01.2010*

Kabul Tarihi : *09.03. 2010*